from array import\*

import math

##############################

def perimeter():

print("\n\n\t\tCALCULATE PERIMETER OF DIFFERENT SHAPES\n")

P=["Square","Rectangle","Triangle","Circle","Semicircle","Sector of Circle","parallelogram","Trapezium","Kite","Cube","Cuboid"]

for i in range(1,12):

print(i,"--",P[i-1])

p=int(input("\nEnter your choice( 1-to-11 ) = "))

if p==1:

print("\nPerimeter of Square = 4 × Side\n SO , you need to \n")

s=float(input("Enter Side = "))

print("\nPerimeter of Square = ",4\*s)

elif p==2:

print("\nPerimeter of Rectangle = 2 × ( Length + Breadth )\n SO , you need to \n")

L=float(input("Enter Length = "))

B=float(input("Enter Breadth = "))

print("\nPerimeter of Rectangle = ",2\*(L+B))

elif p==3:

print("\nPerimeter of Triangle = Side-1 + Side-2 + Side-3 \n SO , you need to \n")

S1=float(input("Enter Side-1 = "))

S2=float(input("Enter Side-2 = "))

S3=float(input("Enter Side-3 = "))

print("\nPerimeter of Triangle = ",S1+S2+S3)

elif p==4:

print("\nPerimeter of Circle = 2 × π × Radius \n SO , you need to \n")

r=float(input("Enter Radius = "))

print("\nPerimeter of Circle = ",2\*3.14\*r )

elif p==5:

print("\nPerimeter of Semiircle = (π × Radius) + ( 2 × Radius )\n SO , you need to \n")

r=float(input("Enter Radius = "))

print("\nPerimeter of Semicircle = ",3.14\*r + 2\*r)

elif p==6:

print("\nPerimeter of Sector = ( 2 × π × Radius × Angle ) + () 2 × Radius )\n\t\t\t\t\t -----\n\t\t\t\t\t 360\n SO , you need to \n")

r=float(input("Enter Radius = "))

q=float(input("Enter Angle of Sector = "))

print("\nPerimeter of Sector = ",(2\*3.14\*r\*q/360) + 2\*r)

elif p==7:

print("\nPerimeter of Parallelogram = 2 × (Sum of Length of Parallel Sides)\n SO , you need to \n")

s1= float(input("Enter Length of 1st Set of parallel Sides = "))

s2= float(input("Enter Length of 2nd Set of parallel Side = "))

print("\nPerimeter of Parallelogram = ",2\*(s1+s2))

elif p==8:

print("\nPerimeter of Trapezium = Side-1 + Side-2 + Side-3 + Side-4\n SO , you need to \n ")

s1 = float(input("Enter Length of Side-1 = "))

s2 = float(input("Enter Length of Side-2 = "))

s3 = float(input("Enter Length of Side-3 = "))

s4 = float(input("Enter Length of Side-4 = "))

print("\nPerimeter of Trapezium = ", s1+s2+s3+s4)

elif p==9:

print("\nPerimeter of Kite = 2 × (Sum of 2 Pair of Equal Sides)\n SO , you need to \n")

s1=float(input("Enter Length of 1st Pair of Equal Sides = "))

s2=float(input("Enter Length of 2nd Pair of Equal Sides = "))

print("\nPerimeter of Kite= ",2\*(s1+s2))

elif p==10:

print("\nPerimeter of Cube = 12 × Side\n SO , you need to \n")

s=float(input("Enter Side = "))

print("\nPerimeter of Cube = ",12\*s)

elif p==11:

print("\nPerimeter of Cuboid = 4 × ( Length + Breadth + Height )\n SO , you need to \n")

l=float(input("Enter Length = "))

b=float(input("Enter Breadth = "))

h=float(input("Enter Height = "))

print("\nPerimeter of Cuboid = ",4\*(l+b+h))

m=input("\nWant to Calculate More Area (yes/no) = ").lower()

if m=="yes" :

perimeter()

###############################

def area2d():

print("\n\n\t\tCALCULATE AREA OF 2-D SHAPES\n")

S=["Square","Rectangle","Circle","Triangle","Trapezium","Parallelogram","kite"]

for i in range(1,8):

print(i,"..",S[i-1])

C=int(input("Enter your choice(1-to-7)="))

if C==1:

print("\nArea of Square = Side × Side\n SO , you need to \n")

s=float(input("Enter Side = "))

print("\nArea = ",s\*s)

elif C==2:

print("\nArea of Rectangle = Length × Breadth\n SO , you need to \n")

L=float(input("Enter Length = "))

B=float(input("Enter Breadth = "))

print("\nArea = ",L\*B)

elif C==3:

print("\nArea of Circle = π × Radius ²\n SO , you need to \n")

r=float(input("Enter Radius = "))

print("\nArea= π × r × r=",3.14\*r\*r )

elif C==4:

print("\nArea of Triangle = 1 × Base × Height \n\t\t --- \n\t\t 2 \n SO , you need to \n")

B=float(input("Enter Base= "))

H=float(input("Enter Height = "))

print("\nArea = ",B\*H\*1/2)

elif C==5:

print("\nArea of Trapezium = Base-1 + Base-2 × Height \n\t\t ---------------\n\t\t 2\n SO , you need to \n ")

h = float(input("Enter Height = "))

b1 = float(input("Enter Base-1 = "))

b2 = float(input("Enter Base-2 = "))

print("\nArea = ", ((b1 + b2) / 2) \* h)

elif C==6:

print("\nArea of Parallelogram = Base × Height \n SO , you need to \n")

B= float(input("Enter Base = "))

H= float(input("Enter Height = "))

print("\nArea = ",B\*H)

elif C==7:

print("\nArea of Kite = Diagonal-1 × Diagonal-2\n\t\t---------------------\n\t\t\t 2\n SO , you need to \n")

d=float(input("Enter Diagonal-1 = "))

D=float(input("Enter Diagonal-2 = "))

print("\nArea = ",d\*D\*1/2)

def choose1():

m=input("\nWant to Calculate More Area (yes/no) = ").lower()

if (m=="yes" or m=="no"):

if m=="yes" :

area2d()

else :

print("\n\t\tWRONG CHOICE")

choose1()

choose1()

##############################

def area3d():

print("\n\n\t\tCALCULATE AREA OF 3-D SHAPES\n")

S=["TSA-Cube","LSA-Cube","TSA-Cuboid","LSA-Cuboid","TSA-Cone","CSA-Cone","TSA-Frustum of cone","CSA-Frustum of Cone","TSA-Cylinder","CSA-Cylinder","TSA-Sphere","TSA-Hemisphere","CSA-Hemisphere"]

for i in range(1,14):

print(i,"..",S[i-1])

C=int(input("\nEnter your choice(1-to-13)="))

if C==1:

print("\nTSA-Cube = 6 × Side × Side \n SO , you need to -\n")

S= float(input("Enter any Side = "))

print("\n\tTSA-Cube=",6\*S\*S)

elif C==2:

print("\nLSA-Cube = 4 × Side × Side \n SO , you need to -\n")

S= float(input("Enter any Side = "))

print("\n\tLSA-Cube=",4\*S\*S)

elif C==3:

print("\nTSA-Cuboid = 2 × (Length × Width + Width × Height + Height × Length)\n SO , you need to-\n")

l= float(input("Enter Length = "))

w= float(input("Enter Width = "))

h= float(input("Enter Height = "))

print("\n\tTSA-Cuboid = ",2\*(l\*w+w\*h+h\*l))

elif C==4:

print("\nLSA-Cuboid = 2 × Height × (Length + Width)\n SO , you need to-\n")

l= float(input("Enter Length = "))

w= float(input("Enter Width = "))

h= float(input("Enter Height = "))

print("\n\tLSA-Cuboid = ",2\*h\*(l+w))

elif C==5:

print("\nTSA-Cone = π × Radius × (Radius × Slant Height)\n\nAlso ; Slant Height = √ (Raxius × Radius + Height × Height)\n\n SO , you need to enter\n")

r=float(input("Enter Radius = "))

h=float(input("Enter Height = "))

l = math.sqrt(r\* r + h\* h)

print("\n\tLength of a Side (Slant)of a Cone = ", l)

print("\tTSA-Cone = " ,3.14 \* r \* (r + l))

elif C==6:

print("\nCSA-Cone = π × Radius × Slant Height\n\nAlso ; Slant Height = √ (Raxius × Radius + Height × Height)\n\n SO , you need to enter\n")

r=float(input("Enter Radius = "))

h=float(input("Enter Height = "))

l = math.sqrt(r\* r + h\* h)

print("\n\tLength of a Side (Slant)of a Cone = ", l)

print("\n\tCSA-Cone = " ,3.14 \* r \* l)

elif C==7:

print("\nTSA-Frustum of Cone = π × Slant Height × (Radius-1 + Radius-2) + π ( Radius-1 ² + Radius-2 ²)\n\nAlso ; Slant Height = √((Radius-1 - Radius-2)² + Height²)\n\n SO , you need to-\n")

r1=float(input("Enter Radius-1(Grater) = "))

r2=float(input("Enter Radius-2 (Smaller)= "))

h=float(input("Enter Height = "))

l = math.sqrt((r1-r2)\*(r1-r2) + h\* h)

print("\n\tLength of a Side (Slant)of a Cone = ", l)

print("\tTSA-Frustum of Cone = " ,3.14 \* l \* (r1 + r2)+3.14\*(r1\*r1+r2\*r2))

elif C==8:

print("\nCSA-Frustum of Cone = π × Slant Height × (Radius-1 + Radius-2)\n\nAlso ; Slant Height = √((Radius-1 - Radius-2)² + Height²)\n\n SO , you need to-\n")

r1=float(input("Enter Radius-1(Grater) = "))

r2=float(input("Enter Radius-2 (Smaller)= "))

h=float(input("Enter Height = "))

l = math.sqrt((r1-r2)\*(r1-r2) + h\* h)

print("\n\tLength of a Side (Slant)of a Cone = ", l)

print("\tCSA-Frustum of Cone = " ,3.14 \* l \* (r1 + r2))

elif C==9:

print("\nTSA-Cylinder = 2 × π × Radius (Radius + Height)\n SO , you need to -\n")

r=float(input("Enter Radius = "))

h=float(input("Enter Height = "))

print("\n\tTSA- Cylinder = ",2\*3.14\*r\*(r+h))

elif C==10:

print("\nCSA-Cylinder= 2 × π × Radius × Height \n SO , you need to -\n")

r=float(input("Enter Radius = "))

h=float(input("Enter Height = "))

print("\n\tCSA- Cylinder = ",2\*3.14\*r\*h)

elif C==11:

print("\nTSA-Sphere = 4 × π × Radius ²\ n SO , you need to-\n")

r= float(input("Enter Radius = "))

print("\n\tTSA-Sphere =",4\*3.14\*r\*r)

elif C==12:

print("\nTSA-Hemisphere = 3 × π × Radius ²\ n SO , you need to-\n")

r= float(input("Enter Radius = "))

print("\n\tTSA-Hemisphere = ",3\*3.14\*r\*r)

elif C==13:

print("\nTSA-Hemisphere = 2 × π × Radius ²\ n SO , you need to-\n")

r= float(input("Enter Radius = "))

print("\n\tCSA-Hemisphere = ",2\*3.14\*r\*r)

def choose2():

m=input("\nWant to Calculate More Area (yes/no) = ").lower()

if (m=="yes" or m=="no"):

if m=="yes" :

area3d()

else :

print("\n\t\tWRONG CHOICE")

choose2()

choose2()

###############################

def Volume():

print("\n\n\t\tCALCULATE VOLUME\n")

V=["Cube","Cuboid","Cone","Frustum of Cone","Cylinder","Sphere","Hemisphere"]

for i in range(1,8):

print(i,"..",V[i-1])

C=int(input("\nEnter your choice(1-to-7)="))

if C==1:

print("\nVolume of Cube = Side × Side × Side = Side ³ \n SO , you need to -\n")

S= float(input("Enter any Side = "))

print("\n\nVolume of Cube=",S\*S\*S)

elif C==2:

print("\nVolume of Cuboid = Length × Width × Height\n SO , you need to-\n")

l= float(input("Enter Length = "))

w= float(input("Enter Width = "))

h= float(input("Enter Height = "))

print("\n\tVolume of Cuboid = ",l\*w\*h)

elif C==3:

print("\nVolume of Cone = π × Radius ² × Height\n\t\t\t\t------\n\t\t\t\t 3\n\n SO , you need to enter\n")

r=float(input("Enter Radius = "))

h=float(input("Enter Height = "))

print("\tVolume of Cone = " ,3.14\*r\*r\*h\*1/3)

elif C==4:

print("\nVolume of Frustum of Cone = 1 × π × Height × (Radius-1 ² + Radius-1 × Radius-2 + Radius-2 ²)\n\t\t\t ---\n\t\t\t 3\n\n SO , you need to-\n")

r1=float(input("Enter Radius-1 = "))

r2=float(input("Enter Radius-2 = "))

h=float(input("Enter Height = "))

print("\tTSA-Frustum of Cone = " ,1/3\*3.14 \* h \* (r1\*r1+r1\*r2+r2\*r2))

elif C==5:

print("\nVolume of Cylinder = π × Radius ² × Height \n SO , you need to -\n")

r=float(input("Enter Radius = "))

h=float(input("Enter Height = "))

print("\n\tVolume of Cylinder = ",3.14\*r\*r\*h)

elif C==6:

print("\nVolume of Hemisphere = 4 × π × Radius ³\nn\t\t ---\n\t\t 3\n SO , you need to-\n")

r= float(input("Enter Radius = "))

print("\n\tVolume of Hemisphere = ",4/3\*3.14\*r\*r\*r)

elif C==7:

print("\nVolume of Hemisphere = 2 × π × Radius ³\nn\t\t ---\n\t\t 3\n SO , you need to-\n")

r= float(input("Enter Radius = "))

print("\n\tVolume of Hemisphere = ",2/3\*3.14\*r\*r\*r)

def choose3():

m=input("\nWant to Calculate More Volume (yes/no) = ").lower()

if (m=="yes" or m=="no"):

if m=="yes" :

Volume()

else :

print("\n\t\tWRONG CHOICE")

choose3()

choose3()

###############################

def Calculator():

print("\n\n\t\tMUKUL'S CALCULATOR")

print("WHAT YOU WANT TO CALCULATE\n")

Q=["Perimeter","2-D Shapes Area","3-D Shapes Area","Volume","Percentage","Average","Simple Interest","Evaluate Expression","Evaluate Power","Converter","Trignometric Functions Value"]

for j in range(1,12):

print(j,"--",Q[j-1])

c=int(input("Enter Your Choice(1-to-11)="))

if c==1:

perimeter()

elif c==2:

area2d()

elif c==3:

area3d()

elif c==4:

Volume()

elif c==5:

print("For Percentage")

t=float(input("Total value="))

o=float(input("Occupied="))

print("Percentage=Occupied × 100/Total=",o/t\*100,"%")

elif c==6:

print("For Average")

t=int(input("Enter total no of enteries="))

e=array('f',[])

T=0

for i in range(t):

v=float(input("enter value="))

e.append(v)

T=T+e[i]

print("Average=",T/t)

elif c==7:

print("For Simple Interest")

p=float(input("Enter principal amount="))

r=float(input("Enter interest rate="))

t=int(input("Enter time (in years)="))

print("Simple Interest=",p\*r\*t/100,"\nAmount=",(p+p\*r\*t/100))

elif c==8:

print("\n\nFor Solving Expression like ' 2+9/3\*2 = 8 ' \n\n SO , you need to-")

R=float(eval(input("Enter Your Expression = ")))

print("Result = ",R)

elif c==9:

print("\n\nFor Calculating Power Of a Number\n\nYou need to-")

N=float(input("Enter Your Number = "))

P=float(eval(input("Enter Power = ")))

print("Result = ",N\*\*P)

elif c==10:

print("\n\t\t\t\tCONVERTER \n\n\t\t\t WORK IN PROGRESS")

elif c==11:

print("\n\t\tTrignometric Function Value Calculator \n\n\t\tWORK IN PROGRESS")

def choose4():

m=input("\nWant to Perform More Calculations in Mukul's Calculator (yes/no) = ").lower()

if (m=="yes" or m=="no"):

if m=="yes" :

Calculator()

else :

print("\n\t\tWRONG CHOICE")

choose4()

choose4()

Calculator()